UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,190	12/19/2001	Xianbin Wang	28940-00117USPT 00-OT-081	5397

7590 03/03/2006	EXAMINER
Lisa K. Jorgenson, Esq.	PATHAK, SUDHANSHU C
STMicroelectronics, Inc.	

	ART UNIT	PAPER NUMBER
1310 Electronics Drive	2634	

Carrollton, TX 75006-5039

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Advisory Action ***Before the Filing of an Appeal Brief***	10/029,190	WANG, XIANBIN
	Examiner	**Art Unit**	
	Sudhanshu C. Pathak	2634	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED January 27th, 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

    a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

    b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

        Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will <u>not</u> be entered because

    (a)☐ They raise new issues that would require further consideration and/or search (see NOTE below);

    (b)☐ They raise the issue of new matter (see NOTE below);

    (c)☒ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

    (d)☐ They present additional claims without canceling a corresponding number of finally rejected claims.

        NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): a) ☒ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

    The status of the claim(s) is (or will be) as follows:

    Claim(s) allowed: _____.

    Claim(s) objected to: _____.

    Claim(s) rejected: *1, 2, 4-14 and 16-34*.

    Claim(s) withdrawn from consideration: *3 & 15*.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will <u>not</u> be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will <u>not</u> be entered because the affidavit or other evidence failed to overcome <u>all</u> rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: <u>See attached "Response to Arguments"</u>.

12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). _____.

13. ☐ Other: _____.

EMMANUEL JAYAPUR
PRIMARY EXAMINER

Response to Arguments

1. In regards to the arguments presented regarding the Drawing objections they are not persuasive.

Figures 1 & 2, the Specification on Page 6, lines 20-21 refers to Figure 1 as "a functional block diagram of an ATU-R transmitter of a general DSL modem" and refers to Figure 2 as "a functional block diagram of an ATU-C transmitter of a general DSL modem". Furthermore, the Specification on Page 31, lines 18-20 states "The general configuration and operation of such DSL transmitters is well know to those skill in the art.". Furthermore, the applicant in the "Remarks" (Page 12, line 8) section states "As, such, Figures 1 and 2 do not illustrate a prior art receiver." This is correct wherein the figures mentioned above disclose a functional block diagram of ATU-R / ATU-C transmitters. In the "Remarks" (Page 12, line 13) section states "....which illustrate embodiments if the invention.....". However, on Page 31, lines 20-22 states "More detailed discussion of the transmitters is made only to the extent necessary to understand operation of the present invention.". Therefore, the ATU transmitters for a DSL modem are not an embodiment of the invention, and merely the invention is the minimization of near-end crosstalk and power reduction in DSL loops. Furthermore, the AAPA discloses the insertion at the transmitter (and then removal in the receiver) of idle ATM cells (filler material) in a DSL link thus requiring element 196 in Fig.'s 1, 2 (Specification, Page 3, lines 1-6 & Specification, Page 4, lines 9-14 & Specification, Page 10, lines 12-22 &

Specification, Page 11, lines 1-5). Therefore, the drawing objections regarding

Figures 1 & 2 have been maintained.

2. In regards to the arguments presented regarding rejections under 35 U.S.C.

103(a) as being unpatentable over the AAPA in view of Sonalkar.

In regards to the arguments presented the applicant admits that Sonalkar

teaches multi-subcarrier communications in DSL and that they are well known

(Remarks, Page 14, lines 2-3, 14-15). However, the applicant states that Sonalkar

fails to teach limitations (a-c) as described in Remarks Page 14, lines 14-21. These

limitations are disclosed as follows:

The Applicant Admitted Prior Art (AAPA) discloses a method and apparatus for

transmitting data in a DSL system over a cable bundle having a plurality of loops and

including at least one active DSL loop (Specification, Page 2, lines 5-8 &

Specification, Page 3, lines 7-8). The AAPA also discloses crosstalk to be the

interference on a particular DSL communication loop due to the communication on

another, closely proximate, active loop in the same cable bundle (Specification,

Page 2, lines 5-13 & Specification, Page 3, lines 7-13). The AAPA also discloses

crosstalk noise to include both near-end crosstalk (NEXT) and far-end crosstalk

(FEXT) wherein it is generally accepted that NEXT presents a more dominant

source of interference in DSL subscriber lines (Specification, Page 2, lines 13-22).

The AAPA also discloses in a DSL system when the bit rate, depending on the

application, is smaller than the available bandwidth, idle ATM cells (filler material)

are inserted to fill up all the data frames of the DSL link (for both upstream and

downstream) (Specification, Page 3, lines 1-6 & Specification, Page 4, lines 9-14 &

Specification, Page 10, lines 12-22 & Specification, Page 11, lines 1-5). The AAPA

further discloses the insertion of the idle cells increases the power consumption for

both of the line drivers at the central office (CO) and the customer premise

equipment (CPE) thus increasing the NEXT noise (Specification, Page 3, lines 1-6,

14-22 & Specification, Page 4, lines 7-14 & Specification, Page 10, lines 12-22 &

Specification, Page 11, lines 1-5). The AAPA further discloses multiple algorithms

for minimizing NEXT noise in DSL system implementations (Specification, Page 9,

lines 9-16). However, the AAPA does not disclose the method for optimizing a DSL

communication performance to include calculating, for a plurality of locations of the

required bandwidths within the available bandwidth, a crosstalk noise effect with

respect to at least one active DSL loop and choosing a location position for the

required bandwidth within the total available bandwidth, where the crosstalk noise

effect is minimized.

Sonalkar discloses a method for minimizing cross talk over a twisted pair of a

twisted pair cable binder (Abstract, lines 1-2). Sonalkar also discloses the method

comprising the steps of one jointly minimizing near end cross talk (NEXT) while

maximizing total data rate, minimizing NEXT while for a given data rate and

minimizing an arbitrary function of total power while maximizing total data rate

(Abstract, lines 3-7). <u>Sonalkar also disclosed selecting a function to be optimized

and performing a bit and power allocation algorithm responsive to the selected

function (Abstract, lines 7-9).</u> Sonalkar also discloses that the modem at the central

office (CO) and remote terminal (RT) <u>negotiate</u> an initial <u>channel</u> signal-to-noise ratio

(SNR) estimation and during the procedure the receiver contains algorithms for

<u>determining the power distribution across the full frequency bandwidth for maximum</u>

<u>data throughput</u> (Specification, Page 4, lines 23-28 & Specification, Page 5, lines 1-7

& Specification, Page 10, lines 11-25). <u>Sonalkar also discloses in a DMT modem a</u>

<u>transmission frequency band is separated into "N" sub-bands or frequency bins</u>

<u>wherein each sub-band has a different capacity as a result of a variation of noise</u>

<u>and attenuation with frequency</u> (Specification, Page 2, lines 9-12 & Specification,

Page 9, lines 12-26). <u>Sonalkar also discloses DSL modems that uses DMT</u>

<u>modulation concentrate the transmitted information in the frequency sub-bands that</u>

<u>have minimum attenuation and noise</u> (Specification, Page 4, lines 11-14). <u>Sonalkar</u>

<u>also discloses algorithms implemented in DSL modems utilizing various</u>

<u>performance functions that minimize the total allocated power or maximize the data</u>

<u>rate or a combination of the two with the purpose of either maximizing the total</u>

<u>transmitted data</u> or meeting the desired data rate within the constraints of the

budgeted power (Specification, Page 5, lines 25-28). <u>Sonalkar also discloses the</u>

<u>method for allowing any bit/power allocation algorithm to meet the objective of</u>

<u>minimizing NEXT</u> (Specification, Page 6, lines 21-23 & Fig. 6). Sonalkar also

discloses optimizing the NEXT parameter (minimizing the total NEXT) for the bit and

power allocation algorithms rather than minimizing the total power consumed

(Specification, Page 11, lines 1-26). Sonalkar also discloses various objective

functions for optimization in joint minimization of the NEXT (Fig. 6 & Specification,

Page 15, lines 1-27 & Specification, Page 16, lines 1-12). Sonalkar also discloses a

model of power spectral density (PSD) of NEXT that is caused by "n" identical power

sources Specification, Page 11, lines 7-23). Sonalkar also discloses generating a

DSL signal comprising a multi-subcarrier (Specification, Page 1, lines 11-13, 23-27 &

Specification, Page 2, lines 21-23 & Specification, Page 5, lines 17-21 &

Specification, Page 9, lines 12-26 & Fig. 4, element 42). Therefore, it would have

been obvious to one of ordinary skill in the art at the time of the invention that

Sonalkar teaches the optimization of various performance functions in joint

conjunction with the minimization of NEXT wherein the bandwidth of transmission is

selected based on the optimization parameters and this can be implemented in the

DSL modem as described in the AAPA so as to maximize the throughput for the

desired data rate so as to minimize NEXT noise and provide a more reliable

communication path for data transfer. Furthermore, there is no criticality in

determining the cross talk noise effect with respect to two active DSL loops is

minimized, this is a matter of design choice and can be calculated as described in

the model as described in Sonalkar. Furthermore, there is again no criticality in

implementing the NEXT reduction as described in the AAPA in view of Sonalkar in

both the upstream and downstream data transmission directions i.e. implementing

the method in both the CO and RT, this is a matter of design choice. Therefore, the

claim rejections have been maintained.

3. In regards to the arguments presented regarding rejections under Double

   Patenting (obviousness-type) as unpatentable over copending Application No.

10/028805, the Terminal Disclaimer was received and approved, and therefore the rejection has been overcome.

Conclusion

4. <u>Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.</u>

- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)-272-3042

- The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak

NUEL BAYARD
EXAMINER